IN THE CLAIMS:

Please cancel claims 1-8 without prejudice or disclaimer.

Please add new claims 9-57 as follows:

--9. (new) A multi-ligand metal chelate compound comprising:

at least one metal species selected from the group consisting of zinc, manganese, iron, molybdenum, tin and antimony, the metal species having multiple coordinating sites;

B8 at least one polydentate chelate ligand having sulfur as a coordinating atom, the at least one ligand coordinating to at least one of the multiple coordination sites of the at least one metal species; and

at least one condensed phosphate and/or polyoxycarboxylic acid coordinated to the remaining coordination sites.

10. (new) An aqueous lubricant comprising the multi-ligand metal chelate compound according to claim 9, suspended or dispersed in an aqueous liquid.

11. (new) An aqueous lubricant as in claim 10, further comprising a soluble condensed phosphate salt, a fatty acid sodium salt, a fatty acid potassium salt and/or a soluble polycarboxylic acid salt.

12. (new) A method of forming a lubricating film on a metal material comprising:

forming a phosphate film on the metal material, the phosphate film comprising zinc and/or iron ions; and

immersing the metal material in the aqueous lubricant of claim 10, whereby a ligand not having sulfur as a coordinating atom reacts with the zinc and/or iron ions in said phosphate film.

68

13. (new) A method as in claim 12, wherein a crystalline polynuclear metal chelate compound is formed on the phosphate film.

14. (new) A method of forming a lubricating film on a metal material comprising:

forming a phosphate film on the metal material, the phosphate film comprising zinc and/or iron ions; and

immersing the metal material in the aqueous lubricant of claim 11, whereby a ligand not having sulfur as a coordinating atom reacts with the zinc and/or iron ions in said phosphate film.

15. (new) A method as in claim 14, wherein a crystalline polynuclear metal chelate compound is formed on the phosphate film.

16. (new) A method of forming a lubricating film on at least one surface selected from a metal material surface and a metal mold surface, comprising applying the aqueous lubricant of claim 10 to the at least one surface.

17. (new) A method as in claim 16, further comprising drying the at least one surface after application of the aqueous lubricant.

18. (new) A method as in claim 17, further comprising plastically working the metal material.

B8

19. (new) A method as in claim 18, further comprising contacting the dried aqueous lubricant with a soluble condensed phosphate salt and/or a soluble polyoxycarboxylic acid salt before plastically working the metal material.

20. (new) A method of forming a lubricating film on at least one surface selected from a metal material surface and a metal mold surface, comprising applying the aqueous lubricant of claim 11 to the at least one surface.

21. (new) A method as in claim 20, further comprising drying the at least one surface after application of the aqueous lubricant.

22. (new) A method as in claim 21, further comprising plastically working the metal material.

23. (new) A method as in claim 22, further comprising contacting the dried aqueous lubricant with a soluble condensed phosphate salt and/or a soluble polyoxycarboxylic acid salt before plastically working the metal material.

24. (new) A compound comprising:

at least one multi-valent metal ion selected from the group consisting of zinc, manganese, iron, molybdenum, tin and antimony,

68

at least one polydentate chelate ligand having at least two sulfur atoms as coordinating atoms, the at least two sulfur coordinating atoms being bound to the at least one metal ion, and

at least two other groups bound to the at least one metal ion, the groups selected from condensed phosphate and polyoxycarboxylic acid.

25. (new) An aqueous lubricant comprising the compound of claim 24 suspended or dispersed in an aqueous liquid.

26. (new) An aqueous lubricant as in claim 25, further comprising a soluble condensed phosphate salt, a fatty acid sodium salt, a fatty acid potassium salt and/or a soluble polyoxycarboxylic acid salt.

27. (new) An aqueous lubricant as in claim 26, further comprising an anionic surfactant or a non-ionic surfactant, wherein the aqueous lubricant has a pH between 8-13.

28. (new) A compound as in claim 24, wherein the at least one metal ion is a zinc ion and the at least two other groups bound to the zinc ion are selected from condensed phosphate and polyoxycarboxylic acid.

29. (new) A compound as in claim 28, wherein the condensed phosphate is bound to the zinc ion and the condensed phosphate is tripolyphosphate.

B8

30. (new) A compound as in claim 29, wherein the polydentate chelate ligand is N,N-diethyldithiocarbamate.

31. (new) A compound as in claim 24, wherein the polydentate chelate ligand is N,N-diethyldithiocarbamate.

32. (new) A compound as in claim 31, wherein the condensed phosphate is bound to the at least one metal ion and the condensed phosphate is tripolyphosphate.

33. (new) A compound as in claim 24, comprising two multi-valent metal ions.

34. (new) A compound as in claim 33, wherein the condensed phosphate is tripolyphosphate.

35. (new) A compound as in claim 34, wherein the polydentate chelate ligand is N,N-diethyldithiocarbamate.

36. (new) A method of forming a lubricating film on a metal surface, comprising mixing the compound of claim 24 with an aqueous liquid, thereby forming an aqueous lubricant, applying the aqueous lubricant to the metal surface and drying the metal surface after application of the aqueous lubricant.

B8

37. (new) A method of forming a lubricating film on a metal surface, comprising mixing the compound of claim 29 with an aqueous liquid, thereby forming an aqueous lubricant, applying the aqueous lubricant to the metal surface and drying the metal surface after application of the aqueous lubricant.

38. (new) A method of forming a lubricating film on a metal surface, comprising mixing the compound of claim 35 with an aqueous liquid, thereby forming an aqueous lubricant, applying the aqueous lubricant to the metal surface and drying the metal surface after application of the aqueous lubricant.

39. (new) A compound having the formula:

$$A_m - M - B_n \qquad (I)$$

wherein:

M is selected from the group consisting of zinc, manganese, iron, tin, molybdenum and oxide and sulfide derivatives thereof, and antimony,

A is a polydentate chelating ligand having at least two sulfur atoms coordinated to M, and

B is independently selected from the group consisting of a condensed phosphate and polyoxycarboxylic acid, wherein m is 1, 2 or 3 and n is 1 or 2.

B8

40. (new) A compound as in claim 39, wherein M is selected from the group consisting of divalent zinc, divalent manganese, trivalent manganese, divalent iron, trivalent iron, tetravalent molybdenum, pentavalent molybdenum, $[(MoOS)_2]^{2+}$, $[Mo_2S_4]^{2+}$, divalent tin, tetravalent tin, trivalent antimony, pentavalent antimony, $(MoO)^{2+}$ and $(MoO)^{2+}$.

41. (new) A lubricant dissolved in an aqueous solvent comprising a compound as in claim 39 and an anionic or non-ionic surfactant, wherein the aqueous lubricant has a pH between 8.0 and 13.0.

42. (new) A lubricant as in claim 41, further comprising a soluble condensed phosphate salt, a fatty acid sodium salt, a fatty acid potassium salt and/or a soluble polyoxycarboxylic acid salt.

43. (new) A lubricant as in claim 42, wherein the lubricant is substantially free of oil and organic solvents.

44. (new) A method for forming a lubricating film on a metal surface, comprising applying the lubricant of claim 43 to the metal surface and drying the metal surface.

45. (new) A method as in claim 44, wherein the metal surface is substantially free of oil.

B8

46. (new) A method as in claim 45, further comprising plastically deforming the metal.

47. (new) A compound as in claim 39, wherein M is a zinc ion and B is independently selected from condensed phosphate and polyoxycarboxylic acid.

48. (new) A compound as in claim 47, wherein B is tripolyphosphate and the tripolyphosphate is bound to the zinc ion.

49. (new) A compound as in claim 39, wherein A is N,N-diethyldithiocarbamate.

50. (new) A compound having the formula:

$$A_m - M - B_n - M - A_m \qquad (II)$$

wherein:

M is selected from the group consisting of zinc, manganese, iron, tin, molybdenum and oxide and sulfide derivatives thereof, and antimony,

A is a polydentate chelating ligand having at least two sulfur atoms coordinated to M,

B is independently selected from the group consisting of a condensed phosphate and polyoxycarboxylic acid, wherein m is 1, 2 or 3 and n is 1 or 2, and

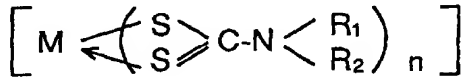
B is tripolyphosphate and the tripolyphosphate is bound to M.

B8

51. (new) A compound as in claim 50, wherein B is N,N-diethyldithiocarbamate.

52. (new) A compound as in claim 39, wherein B is tripolyphosphate and the tripolyphosphate is bound to M.

53. (new) A compound as in claim 52, wherein M is zinc and A has a formula:

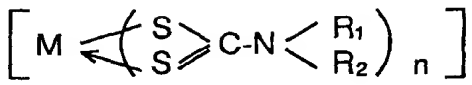


wherein R_1 is the same as or different from R_2,

wherein when R_1 and R_2 are the same, each of R_1 and R_2 is H, $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, $-C_4H_9$ (straight chain), iso-C_4H_9, tert-C_4H_9 or $-C_6H_5$, and

wherein when R_1 and R_2 are different, R_1 is H and R_2 is $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, iso-C_4H_9, tert-C_4H_9 or $-C_4H_9$ (straight chain); or R_1 is $-CH_3$ or $-C_2H_5$ and R_2 is $-C_6H_5$.

54. (new) A compound as in claim 24, wherein the at least one polydentate chelate ligand has a formula:



58

wherein R_1 is the same as or different from R_2,

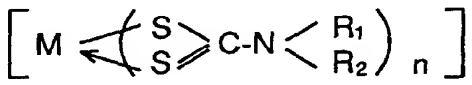
wherein when R_1 and R_2 are the same, each of R_1 and R_2 is H, $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, $-C_4H_9$ (straight chain), iso-C_4H_9, tert-C_4H_9 or $-C_6H_5$, and

wherein when R_1 and R_2 are different, R_1 is H and R_2 is $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, iso-C_4H_9, tert-C_4H_9 or $-C_4H_9$ (straight chain); or R_1 is $-CH_3$ or $-C_2H_5$ and R_2 is $-C_6H_5$,

wherein in the formula, M represents the multi-valent metal ion.

55. (new) A compound as in claim 54, wherein the at least one multi-valent metal ion is zinc.

56. (new) A compound as in claim 9, wherein the at least one polydentate chelate ligand has a formula:



wherein R_1 is the same as or different from R_2,

wherein when R_1 and R_2 are the same, each of R_1 and R_2 is H, $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, $-C_4H_9$ (straight chain), iso-C_4H_9, tert-C_4H_9 or $-C_6H_5$, and

wherein when R_1 and R_2 are different, R_1 is H and R_2 is $-CH_3$, $-C_2H_5$, $-C_3H_7$ (straight chain), iso-C_3H_7, iso-C_4H_9, tert-C_4H_9 or $-C_4H_9$ (straight chain); or R_1 is $-CH_3$ or $-C_2H_5$ and R_2 is $-C_6H_5$,

58

wherein in the formula, M represents the metal species.

57. (new) A compound as in claim 56, wherein the at least one multi-valent metal ion is zinc. --